Paper No. 50

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOJI KANE
and
AKIRA NOHARA

Appeal No. 96-0338
Application 08/095,179[1]

HEARD: MAY 6, 1999

Before THOMAS, KRASS, and GROSS, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

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[1] Application for patent filed July 23, 1993. According to appellants, this application is a continuation of Application 07/637,270, filed January 3, 1991.

DECISION ON APPEAL

Appellants have appealed to the Board from the examiner's final rejection of claims 1, 2, 4, 5, 13, 14, 17 through 24 and 26 through 28, which constitute all the claims remaining in the application.

Representative claim 1 is reproduced below:

1. A signal processing device comprising:

frequency analysis means for performing frequency analysis for an input signal which can contain an information signal and noise, and providing a frequency-analyzed signal;

signal detection means for detecting from said frequency-analyzed signal, a first time period during which an input signal received by said frequency analysis means contains both said information signal and noise and a second time period during which said input signal contains only noise, said signal detection means including

cepstrum analysis means for performing cepstrum analysis on said frequency-analyzed signal to obtain a cepstrum peak; and

signal detecting means for detecting said first time period based upon a cepstrum analysis by said cepstrum analysis means;

noise prediction means which receives said frequency-analyzed signal for predicting noise in an input

signal received by said frequency analysis means during said first time period on the basis of noise in said input signal during said second time period; and

cancel means for multiplying said predicted noise by at least one coefficient and subtracting said multiplied predicted noise from said frequency-analyzed signal during said first time period.

The following reference is relied on by the examiner:

Kroschel, "Methods For Noise Reduction Applied To Speech Input Systems", 2 IEEE Proceedings on VLSI and Computer Peripherals, 82-87 (1989).

Claims 1, 2, 4, 5, 13, 14, 17 through 24 and 26 through 28 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner relies upon Kroschel alone. As indicated at pages 2 and 7 of the answer, the examiner has withdrawn a rejection under 35 U.S.C. § 103 over another reference. From our review of the file, we note the following.

Claim 14 on appeal depends from canceled claim 3. Since claim 3 has been incorporated into the subject matter of independent claim 1, it appears that claim 14 is intended to depend from

claim 1. There appears to be no antecedent basis of "said plurality of frequency bands" as recited near the end of dependent claim 21 on appeal. We note an apparent violation of Rule 75(b) as to the inclusion of both claim 21/18/1 and independent claim 22. The subject matter of dependent claim 21/18/1 appears to be substantially identical to that set forth in independent claim 22, violating the requirements of this rule since the result is apparently what amounts to essentially duplicate claims.

Rather than repeat the positions of the appellants and the examiner, reference is made to the brief and the answer for the respective details thereof. Since the examiner has indicated in the communications of October 27, 1995 and June 3, 1996 that the reply brief filed on September 28, 1995 has not been entered, we have not considered it in our deliberations.

OPINION

Generally for the reasons expressed by appellants in the principal brief on appeal, we reverse the outstanding rejection of all the claims on appeal.

As a starting point the subject matter of independent claims 1 and 22 on appeal is derived from a showing in appellants' Figure 2 within the large dashed block element which in turn feeds the voice recognizer circuit element 10. In an analogous manner, Kroschel's Figure 1 at the bottom of page 82 of that reference shows conceptually his noise reduction system feeding a speech recognition system. The examiner's reliance upon the specific types of cepstral coding features discussed at column 1 of page 83 relate only to the speech recognition block in Kroschel's Figure 1 at the bottom of page 82 as expressed in the topic heading at the top of column 1 at page 83.

On the other hand, the specific noise reduction techniques taught in this reference beginning at the bottom of column 1 at page 84 of this reference conceptually relate to the noise reduction block in Figure 1 at the bottom of page 82 of this reference. Column 2 of page 84 relates to a specific approach, apparently the only approach actually taught in Kroschel, to reducing noise within an incoming signal which approach is based upon the average of the noise power spectrum calculated by FFT in speech pauses according to a particular

formula specified. The system is said to operate in accordance with speech pauses and also taught to operate with a continuous updating of noise power spectrums in a different embodiment. The succeeding discussion at the first column of page 85 relates to further aspects of this noise reduction technique.

However, the overall concept of Kroschel's disclosure is brought back into perspective in accordance with that shown at Figure 1 at the bottom of page 82 of this reference in the topic headings “Speech Recognition With Noise Reduction” at the middle of the second column of page 85. There, the discussion relates to both a modular and integrated noise reduction and speech recognition system. It is clear, however, that the discussion here is consistent with the Figure 1 discussion at page 82 since the intent is that the noise reduction system is followed by a speech recognition system, which speech recognition system is taught to utilize one of the previously discussed cepstral coding approaches originally discussed at column 1 on page 83 of this reference.

Although we do not ascribe to appellants' views that Kroschel actually teaches away from the claimed cepstrum analysis means, we do agree with appellants' overall view that cepstral coding and cepstral coefficients in Kroschel are taught in the reference to apply only to word recognition circuits as just outlined. We are not persuaded by the examiner's arguments nor do we find any evidence among Kroschel's teachings as a whole that it would have been obvious to the artisan to have applied the cepstral coding teachings specific only to word recognition methods to substitute for the specified noise reduction methods at pages 84 and 85 of Kroschel's article.

In view of the foregoing, we have reversed the rejection of claims 1, 2, 4, 5, 13, 14, 17 through 24 and 26 through 28 under 35 U.S.C. § 103. Accordingly, the decision of the examiner is reversed.

REVERSED

JAMES D. THOMAS	)	
Administrative Patent Judge	)	
	)	
	)	
ERROL A. KRASS	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
ANITA PELLMAN GROSS	)	
Administrative Patent Judge	)	

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